Space Weather Forecast

Issued on Thursday, 22 February 2024 at 13:07 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Ongoing Moderate solar activity with a chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been High, with two Strong flares observed from the large region in the northeast quadrant. This region continues to develop both in size and magnetic complexity. The only other region on the visible disc is a small but stable region in the north centre of the solar disc. A returning region appears to be just beyond the southeast limb but has exhibited significant activity while crossing the far side of the Sun.

A large filament was observed leaving the northwest of the disc around 21/1730UTC and may give a glancing blow late on 24 Feb or early on 25 Feb. Another CME (coronal mass ejection) appeared to originate in the area around the returning region, but has been analysed as missing Earth. Neither of the Strong flares appears to have produced a CME.

Solar Wind / Geomagnetic Activity: Solar winds have been at ambient levels throughout. Total magnetic field strength has been weak, with the important north-south component varying weakly. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: Solar radiation was just above resting background levels but well below the Minor Radiation Storm threshold.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is forecast with a chance of High activity, mainly from the large region in the northeast quadrant, but also potentially from the returning region on the southeast limb.

Solar Wind / Geomagnetic Activity: A filament was observed leaving the northwest of the disc around 21/1730UTC and may give a glancing blow late on 24 Feb or early on 25 Feb, otherwise there are currently no Earth-directed CMEs in the forecast. Solar winds are ambient, but may reach 450-500km/s either later on 24 or during 25 February due to a forecast connection with the high speed stream from a coronal hole. Geomagnetic activity is forecast to be mainly Quiet with isolated Unsettled intervals. Active intervals are then considered possible due to the onset of the high speed stream on 24 and 25 February, with a slight chance of G1/Minor storm.

Energetic Particles / Solar Radiation: Solar radiation levels are expected to continue at background levels or just above, with a slight chance of an increase during this period due to any significantly energetic flares, especially from the large region in the northeast.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	Yes	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	15	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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